REMARKS

Claims 1-15 are currently pending in the subject application and are presently under consideration. Claims 5, 6, and 9 have been amended in response to objections. Claim 13 has been canceled herein without prejudice or disclaimer, and its original subject matter has been incorporated into independent claim 10. Claims 10-12 and 14 have been amended to be more consistent with the original form; accordingly no new matter has been introduced, no new search is required, and it is respectfully submitted that the amendments should be entered. Favorable reconsideration of the subject patent application is respectfully requested in view of the amendments and comments herein.

I. Rejection of Claims 1-7 Under 35 U.S.C. §103(a)

Claims 1-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Peng (U.S. 5,787,190) in view of Le (U.S. 5,801,954). Withdrawal of this rejection is requested for at least the following reasons. The cited references, either alone or in combination, fail to teach or suggest all elements of the subject claims.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art and not based on the Applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicant's claimed invention relates to systems that employ exposure compensation to provide uniform critical dimension (CD) control on a reticle during fabrication. Independent claim 1 recites a fabrication device and a regulation component that receives reticle inspection data from the fabrication device and utilizes the data to facilitate adjusting control parameters of the fabrication device to improve reticle fabrication by ***mitigating defects associated with delay***

times. Independent claim 10 recites a similar system, with a larger number of functional components.

Peng generally relates to a method and apparatus for pattern recognition of wafer test bins. *See* Fig. 1, col. 3, ll. 46-60. Independent claims 1 and 2 recite wafer test bin pattern recognition systems. Independent claim 1 recites a system comprising a neural network processor, a semiconductor tester, and a data analyzer. Independent claim 2 recites a system comprising a wafer tester, a processor including a neural network coupled to the wafer tester, two analyzers, and a data analyzer. Independent claim 3 recites a method for operating a wafer tester and a neural network for selecting defect patterns, comprising: generating data from the wafer, forming a first wafer map, supplying the bin summaries for a population of wafers, comparing the first map with a representative wafer map, and selecting for a wafer a fault pattern. *See* col. 7, l. 59-col. 8, l. 65. However, as the Examiner admits, Peng relates to wafers, not masks.

The Examiner utilizes Le to overcome the deficiencies of Peng with respect to masks, or reticles. Le generally relates to a process for designing and checking a mask layout. *See* Title, Abstract. Le discloses a system where reticles are provided, and diagnostic information about the reticles is sent through a feedback network to update and correct the mask. *See* col. 3, ll. 7-16.

The Examiner contends that Peng, in view of Le, discloses a system that produces the fabrication device and regulation component of the subject claim 1. Applicants' representative respectfully disagrees for at least the following reasons. Unlike the subject claim 1, Peng is silent with respect to ***mitigating defects associated with delay times***.

Defects associated with delay times (commonly known as "vacuum effect") can be traced to the sensitivity to airborne contaminants of chemically amplified resists used in electron beam lithography. Additional complications can arise with respect to temperature variations and stability. *See* p. 3, ll. 1-6. In response to the vacuum effect, one can implement measures such as filtering the air utilized in a fabrication environment and providing consistent write times.

The passage in Peng cited by the Examiner describes a data analysis to determine the existence of an overlap of fault patterns generated from the neural network and wafer maps produced by testers. The failure analysis performs further tests to find the root cause of faults on the wafer, such as layer strip back, hot spot, chemical analysis, and cross section analysis. The

information generated from the failure analysis is used to generate a report, which is submitted to the fabrication facility and used to adjust the fabrication process.

The "further tests" disclosed by Peng are directed broadly toward general defects that may encompass, but do not make obvious, the specific defects associated with delay times. Disclosure of a broad genus does not render obvious a claim of a species where the species is not taught or fairly suggested by the disclosure. *In re Baird*, 16 F.3d 380, 29 USPQ2d (BNA) 1550, (Fed. Cir. 1994). Peng is silent towards ***mitigating defects associated with delay times***, and Peng's broad disclosure of "defects" does not fairly suggest ***mitigating defects associated with delay times***. Accordingly, because Peng does not disclose or fairly suggest mitigating defects associated with delay times, Peng cannot render independent claim 1, and dependent claims 2-7 that depend therefrom, obvious.

In view of at least the foregoing, it is readily apparent that the cited references fail to make obvious applicant's invention as recited in the subject claims, and this rejection should be withdrawn.

II. Rejection of Claims 8, 10, 12-15 Under 35 U.S.C. §103(a)

Claims 8, 10, 12-15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Peng as modified by Le in view of Vernon (U.S. 6,331,711). Withdrawal of this rejection is requested for at least the following reasons. The cited references, either alone or in combination, fail to teach or suggest all elements of the subject claims.

Peng and Le are described in Section I of this Reply. However, Peng, as modified by Le, does not disclose using a resist. The Examiner uses Vernon to overcome the deficiencies of Peng, as modified by Le, with respect to resists that can be used in reticle creation.

Vernon generally relates to correction for systematic, low spatial frequency critical dimension variations in lithography. *See* col. 2, l. 56-col. 3, l. 10. Vernon discloses a typical application of lithography for defining patterns onto photo or electron sensitive resist coated on a substrate. *See* col. 4, ll. 13-28. The substrate is typically a semiconductor or reticle blank for a semiconductor fabrication.

The Examiner contends that, in regard to the subject matter of original claim 13, Peng, as modified Le and in view of Vernon, discloses a feedback/feed forward component that is an advanced process control system. The Examiner further asserts that because the control

component in Peng is performed in a computer system, it is advanced. Applicants' representative respectfully disagrees. The cited references, either alone or in combination, fail to teach or suggest a feedback/feed forward control component that is ***an advanced process control system***.

Advanced process control (APC) is not merely control performed through a computer system. APC refers to a significantly distinct technological concept in the art, which is not equivalent to control performed through a computer system, as asserted by the Examiner. APC applications detect and identify process and product deviations and make changes automatically to improve operations. APC predicts process outcomes of varied operating conditions. The APC concept evolved from a method called Statistical Process control (SPC). SPC only detected results of process deviations through statistical means, and generally did not inform the user regarding the manner of process deviations or how to correct for them. The two major components of APC are run-to-run (R2R) control and Fault Detection and Classification (FDC).

R2R control is a discrete process control scenario in which the product recipe is modified before the start of processing so as to minimize process deviation and defects. R2R control increases control capability and reduces production waste.

FDC is an application used to perform tool, process, and product integrity monitoring and diagnosis. Large amounts of data from the process and wafer are analyzed and compared against control limits to determine if a process or tool "fault" has occurred. By detecting the faults before or during processing, fewer reticles are scrapped, and by determining the cause of the fault, the repair time is minimized.

In short, APC is a distinct technological concept compared to simple computer control. While APC may be broadly characterized as a "species of the genus" of "computer control," disclosure of a genus that does not teach or fairly suggest a species does not render the species obvious. *In re Baird*, 16 F.3d 380, 29 USPQ2d (BNA) 1550, (Fed. Cir. 1994).

The subject matter of original claim 13 has been incorporated into independent claim 10, which should now be in allowable form. Because the remainder of the claims rejected under 35 U.S.C. §103(a) depend from allowable independent claims, all claims should now be in allowable form.

In view of at least the foregoing, it is readily apparent that the cited references fail to make obvious applicant's invention as recited in the subject claims, and this rejection should be withdrawn.

III. Rejection of Claim 9 Under 35 U.S.C. §103(a)

Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Peng as modified by Le and Vernon as applied to claim 8 above, and further in view of Bojko. Withdrawal of this rejection is requested for at least the following reasons. Claim 9 depends from independent claim 1, which is now allowable subject matter. Accordingly, Applicants' representative respectfully requests this rejection be withdrawn.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [AMDP994US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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